(Music)

Mark Masselli: This is Conversations on Health Care. I am Mark Masselli.

Margaret Flinter: And I am Margaret Flinter.

Mark Masselli: Well Margaret, I have been so moved by the tremendous outpouring of support for military this past week. With Veterans Day just behind us, I want to take time out to honor all of our veterans who served this country so selflessly.

Margaret Flinter: And two million Americans have served in both Iraq and Afghanistan, Mark, and an estimated quarter of those veterans are dealing with some kind of lingering health issues due to their service.

Mark Masselli: Perhaps the most pervasive among them Margaret are the so-called invisible wounds, lingering issues from traumatic brain injury and post traumatic stress disorders are plaguing so many of our veterans.

Margaret Flinter: And so Mark during this week when we celebrate Veterans Day I think it's important to note that the VA has many programs in place to help soldiers grapple with the effects of PTSD and other issues that are results of their dedicated service. More attention is being focused on this problem and we want to support all efforts to address it.

Mark Masselli: We recently focused our efforts at the health center on reaching out to folks who may be dealing with depression. We want to remind veterans and their families that help is available.

Margaret Flinter: The Obama Administration launched an initiative last year that's pulling together our teaching hospitals around the country, over hundred to expand their programs for veterans in needs of help. And I think equally importantly, there is funding for research to yield better more effective ways to treat these soldiers who have sacrificed so much and are suffering.

Mark Masselli: Speaking of research, our guest today is the lead clinical researcher on IBM's effort to give medical professionals a powerful new tool in diagnosis and treatment options.

Margaret Flinter: Dr. Basit Chaudry is leading clinical research on the team that is transforming Watson, the computer that our listeners may remember beat the top contestants on the game show Jeopardy.

Mark Masselli: It really is fascinating what they are doing with this supercomputer. Programmed with language recognition skills, Watson is being

tested in programs at 01:56 _____ Memorial in New York and at Cleveland Clinic as well.

Margaret Flinter: But no matter what the topic, you can hear all of our shows by Googling CHC Radio.

Mark Masselli: And as always, if you have comments, please email us at www.chcradio.com or find us on Facebook or Twitter; we would love to hear from you.

Margaret Flinter: Now we will get to our interview with Dr. Chaudry in just a moment.

Mark Masselli: But first here is our producer Marianne O'Hare with this week's Headline News.

Marianne O'Hare: I am Marianne O'Hare with this Headline News. The Obama Administration on Friday gave states more time to submit plans to setup state-based health insurance exchanges, a concession to the reality that many states had delayed planning until they saw who won the Presidential election. States will have to tell federal regulators they plan to go ahead by next Friday but they have until December 14th to submit plans for state-based online insurance markets called Insurance Exchanges.

Meanwhile, the election behind us, the focus now on the looming fiscal cliff, when a number of Bush era and Obama tax breaks come to an end and funding for several programs run out including to the Pentagon, education, health care, scheduled to begin January 1st. The cliff is a result of previous failures of a bitterly divided Congress in Whitehouse to deal with the government's spiraling debt. The Congressional Budget Office estimates the Austerity Program could reduce the deficit by more than $500 billion including an $11 billion cut in compensation to doctors who participate in Medicare. Meanwhile a number of health care providers across the country are urging the federal government not to go ahead with those Medicare cuts. Doctors treating that patient population are already strapped in terms of compensation.

President Obama is meeting with labor leaders this week and chief executives as well as he rallies support for the idea of tax increases. Medicare could be on the table for discussion. A group of health researcher advocates meanwhile are spending the week raising awareness about what cuts to medical research would do to advancements in health and science in this country and estimated $4 billion in research money is in jeopardy for hundreds of projects.

Meanwhile, a recent study revealed an alarming statistic. Veterans are twice as likely as their non-GI counterparts to die from ALS or Lou Gehrig's Disease, a devastating neurodegenerative disorder that slowly paralyzes patients. The ALS

Society wants veterans and families to know they are eligible for coverage of their illness and other family assistance as long as they served at least 90 consecutive days. And GIs and energy drinks, it's a long hard slog for combat veterans often under harsh conditions with high stress. Energy drinks are ubiquitous in combat zones. Almost half of active duty combat soldiers consume at least one energy drink per day compared to about 6% in the general population. Studies show that might not be the answer. These soldiers who drank three or more high caffeine drinks had a harder time falling and staying asleep thus leading to worsening fatigue. I am Marianne O'Hare with this Headline News.

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Margaret Flinter: We are speaking today with Dr. Basit Chaudry, Medical Scientist and lead research clinician for IBM's artificial intelligence supercomputer Watson, which gain notoriety last year by beating the top two contestants in the history of the game show Jeopardy. Dr. Chaudry is a lead researcher on the team that is transitioning Watson's capability as a transformative asset in the health care industry. An internist who served in the primary care field, Dr. Chaudry recently served on the President's Council of Advisors on Science and Technology. Dr. Chaudry, welcome to Conversations on Health Care.

Dr. Basit Chaudry: Thank you very much, glad to be here.

Mark Masselli: You know, the coming out party if you will for Watson was the game show Jeopardy but it took IBM's scientists four years to prepare Watson for that experience, recognized Watson's potential application reaching far beyond conquering game shows and some analysts have called Watson the first machine of the third computer age of cognitive computer. Can you tell our listeners in simple lay terms what Watson really is and what makes Watson's language recognition system so groundbreaking in the computing world?

Dr. Basit Chaudry: Watson is a computer system that's made up of many, many, many different algorithms. And each one of those algorithms accomplishes different tasks with regard to trying to process, analyze and understand different aspects of natural language, and then it seeks to match those component parts, those different pieces of language to different kinds of texts and different kinds of passages that one might find in Wikipedia in different places of the web, in different kinds of say textbooks or research journals, any different kind of text and I think that's where a lot of the power of this system comes from. It can break up different kinds of sentences that a user may pose to it and then try to match that language against the language that one would find in other sets of resources like a book. So I think the ability to look at something that's posed in regular language that people use on a day-to-day basis and then match it to other language that people store ideas in, concepts in, knowledge in, but are also

structured in everyday language or even more complicated scientific language gives the system its power.

Margaret Flinter: Dr. Chaudry, all time Jeopardy champ, 07:25 _____ spoke highly obviously of the process that Watson utilized to win the game and he said that essentially Watson did the same thing that he had done. The scale for Watson is astonishing, able to sort through 200 million pages of data in just a couple of seconds. Maybe you could tell our listeners a little bit about the new technology that enables Watson to mine this massive amount of data and then what was the jump to applying it to health care.

Dr. Basit Chaudry: I think what makes Watson I think particularly different and what makes it really exciting and innovative is really the mathematics and the pure computer science that was involved with its design and that really gets around to the issue of how do you design algorithms and get many, many algorithms to come together and work together. So after we had the game show and after we won on Jeopardy, we were kind of looking at what are the different kinds of fields that would really pose a continued challenge to the system so that we could further develop its capabilities, and what areas did we really think there was a great deal of potential high impact for this kind of cognitive computer. And medicine and health care were one of the fields that came up right away. And I think that that's because the kinds of knowledge that are involved in medicine and health care are really quite complex. So, a cognitive computing system like Watson we felt could really make a significant difference in both improving sort of the day-to-day work lives of health care professionals and ultimately the care that patients receive.

Mark Masselli: So I want to move from the imagery of Jeopardy to Star Trek then because it sounds like for those of you who are Star Trekkers out there you might be more familiar with the 09:09 _____ which helped diagnose disease and collect bodily information on patients. And you have now got Watson in medical school. I guess he is in his -- I don't know if it's he or she is serving its third year at the University of Maryland Medical School and you **fostered** a partnership with the Cleveland Clinic to further advance Watson's medical education. So, frame up for the public if you will sort of the specifics now of moving into the health care arena where are you headed with Watson.

Dr. Basit Chaudry: Watson is really being engineered to create a set of decision aids for clinicians. What Watson does is it generates many, many different hypothesis. So, for instance, when it wants to answer a question, it doesn't simply come up with an answer; it comes up with initially hundreds and hundreds of potential answers. Then as it goes through its sequence of steps and its analytic method, it pairs down those hypotheses.

Mark Masselli: It's weighting them all?

Dr. Basit Chaudry: Yes exactly. So what you do is as it goes along the different steps of processing, the different hypotheses are evaluated for how likely they are and ultimately what's actually produced is a list of hypotheses with different confidence scores. So, for Jeopardy, to answer a question, the machine had to cross a certain level of confidence before it returned an answer. So one of the things I think was interesting about this show that was little difficult to follow in some ways was the fact that along the screen you could see a list of answers that Watson had generated. Those were all the top hypotheses that we had and alongside those were confidence scores. And that's really sort of how we see the combination working.

Margaret Flinter: Dr. Chaudry, I understand there is also a very important collaboration ongoing now with memorial 10:56 _____ cancer center in New York and that the clinicians there have been prepping Watson to do some real time patient diagnoses and hope to start using Watson this fall to test the computer's effectiveness in this diagnostic setting. We would like to hear more about this pilot program at 11:13 _____, what it's aiming to achieve and I guess I would ask who is talking to Watson.

Dr. Basit Chaudry: Margaret, what we are trying to do right now is systematically expand Watson's capabilities inside of medicine and health care. What we are trying to do right now is really systematically and thoroughly adapt both the process through which we developed Watson initially and then also the algorithms and the technologies to the field. So when we talk about, or you may hear about things like Watson going to medical school for instance, what we are really trying to do is harness the tremendous knowledge that people inside of health care and medicine have and use that to move the system forward so it can support different kinds of cognitive functions inside of medicine and different kinds of decision making. So one of those that we have worked on is this use case with 12:06 _____ and they have been wonderful partners.

I think many people feel in the future medicine is going to become more and more personalized and rather than making treatment decisions for large groups of patients, we are going to be making more and more individually tailored decisions. Now, in that future, things become extremely complicated even worse than they are now because in the future, when we have all this complex genomics and proteomics data, we may have to pick a treatment for an individual based on hundreds and hundreds of characteristics that they have that are relevant to their case. And once you start doing that, it becomes very difficult for a human being to fit that all in their head. So, what the partnership with 12:51 _____ is really focused on is working towards that future. So what we are doing is try to look at different dimensions of cancer care and then make recommendations on what the optimal therapy would be for that set of medical demographic and personal characteristics that a patient has.

Mark Masselli: We are speaking today with Dr. Basit Chaudry, Medical Scientist and lead Research Clinician for IBM's groundbreaking artificial intelligence, language recognition supercomputer Watson and you have sort of described Watson as a little like the electronic health record, it's a decision support tool to the clinician.

Dr. Basit Chaudry: We have a range of different initial use cases that we are developing and I think primary care is a really important one. So one of the things for instance we are doing with Cleveland Clinic is working on an electronic health record application. And I think one of the things if you look at EHRs and this is particularly I think important for fields like primary care and public health. Many EHRs what they do is they require users, particularly health care professionals to code data into very structured fields that go into databases. And all those things are necessary and useful but one of the things that's happening is as you structure more and more data in this way you lose some aspects of clinical richness. And I think this is particularly important for primary care; I think it's particularly important for understanding patient experience; I think it's particularly important for areas in public health where you are looking for complex phenomena and I think this is a really important aspect of cognitive computing what Watson will hopefully be able to do because it allows people to communicate in ways that they most naturally do. I think these kinds of technologies are going to allow greater richness in a return of that narrative dimension to medicine also allowing us to do data analysis. And I think this is very, very important.

When we think about things like advanced primary care, different models of putting together care coordination, I think this narrative aspect of medicine is going to be exceptionally important. Part of the reality of medicine particularly in primary care is you have 10 minutes to see a patient, right. In 10 minutes it's really difficult to do things like go through a chart and that's just the reality of life today. I mean in fact I think one of the intuitions I have as a clinician is some of the biggest impacts for these kinds of technologies are going to be freeing health care professionals from doing some of the information and data management tasks that we do right now that are simply quite difficult to do but don't necessarily return a lot of value back to patients.

Margaret Flinter: Well Dr. Chaudry, I think you just struck a very powerful chord in the hearts and minds of primary care physicians and nurse practitioners all over the country who will really appreciate that next generation aspect of electronic health records so thank you for your work in that. And you know, every time we see a quantum leap in computing and how it can be applied to health care, it's the base upon which you then build so many other applications. And one of them that also comes up so much of course in primary care is the ability to look at information across distance not just in language but also in images. And I understand that's something you are working on as well, adding visual recognition to the Watson skill set so if a community health worker in a rural

village in Nigeria or rural America uploaded an image of a rash, Watson might be able to suggest a diagnosis from scanning and analyzing the image. Tell us a little bit more about how you see this especially in settings where specialists may be difficult to access.

Dr. Basit Chaudry: So the visual aspect of this is something we are hopeful of developing and something we are excited about but it's not something that we have really developed significantly right now. It's part of particularly our research agenda as we think we will get there. And again, I think you mentioned rashes and things like that. This is partly why again, as I mentioned before, we really take the complexity of medicine seriously. So we know that there is going to be many requirements inside the field such as recognizing rashes from distance that are going to be particularly important for the future of medicine. So part of what we are doing is we are trying to establish and understand what are all those sets of requirements and then sort of guide the research & development agenda based on those sets of requirements.

Mark Masselli: So part of the excitement about Watson is it appears that you can speak to Watson though there may be somebody -- the wizard might be behind the cloak. And at the same time the public is watching this incredible transformation where we are moving away from our computer to our laptop to now our cell phone. So I assume both the sort of GUI interface of something I can talk to directly and also something that can come off of my mobile device is in Watson's future. How do you think about the distributive sort of aspects of Watson, sort of the open sourcing, and I am sure these algorithms are quite expensive, no one is going to give them away but how do you see this in the public domain?

Dr. Basit Chaudry: I think that there is going to be many different kinds of applications and almost versions of Watson so to speak for different purposes. So if you look at the machine that played Jeopardy, the reason why it was so significant in terms of its processing capacity and storage capacity is because the requirement for that application was to try to win Jeopardy. So, for instance, that meant you had to be able to answer questions in less than 3 seconds, right. That's a very difficult set of requirements and that's why for instance the hardware was built out to the degree it was. But for many other applications you are not going to really necessarily need that much processing power, right. Again what we are trying to do is really look at what are some of the core capabilities needed to try to really advance innovation in health care and really focus on those at this time.

Margaret Flinter: Dr. Chaudry, we like to ask all of our guests this final question. When you look around the country, and around the world, what do you see in terms of innovation that our listeners at Conversations should be keeping an eye on?

Dr. Basit Chaudry: You know again as a physician, one of the things I am really excited about is the innovation that's going on and the way medicine is organized. And I think things like primary care, medical home, and accountable care organizations, models that are emerging where we have cooperation between stakeholders in the health care ecosystem, I find really exciting. For a long time, we almost had this, it's not a conflict model, at least an antagonism model in health care where it was difficult for parties across different lines to work together. And I hope and think that that's changing right now. And I think models where what we are trying to do is really focus on what's best for the patient, and that's one perspective of a physician, a nurse practitioner, a health care team surrounding the needs of a patient, payers, employers, communities, really developing an ecosystem of care and a team particularly tasked with taking care of a patient in which they actively participate is really tremendously exciting. It's those kinds of models and how those sets of cooperative relationships develop which are really going to heavily influence what kind of value and the kind of impact the innovation and technologies we have around have. The value of these kinds of technical innovations is really going to come and be heavily influenced from the kind of innovation we are putting in the practice of medicine.

Mark Masselli: We have been speaking today with Dr. Basit Chaudry, Medical Scientist and lead research clinician for Watson IBM. You will find more about the Watson project by Googling Watson IBM. Dr. Chaudry, thank you so much for joining us on Conversations on Health Care.

Dr. Basit Chaudry: Thank you very much. It's been a pleasure.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award-winning journalist and managing editor of FactCheck.org, a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in US politics. Lori, what have you got for us this week?

Lori Robertson: Well, Mark and Margaret, now that President Obama has been re-elected we believe there has been a resurgence of viral email traffic related to the Affordable Care Act, at least judging by the questions readers have been sending to us. Several readers have asked whether the law was going to limit care for seniors or anyone whether it's dialysis or care after a stroke. But the law doesn't dictate what medical treatment anyone can get. These claims are reminiscent of the old death panel claims. One old chain email from 2009 before the law was even passed said that "A government committee will decide what treatments you get". But the claim referred to an advisory committee that would recommend what minimum benefits all insurance plans would have to cover. We have seen several attempts to cash the law as a way to limit medical care but

they are not true. Other claims have referred to a panel that is passed with recommending ways to slow the growth in Medicare spending. The law specifically says that panel can't ration health care. And that's my fact checked for this week. I am Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact, that you would like checked, email us at www.chcradio.com. We will have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

(Music)

Margaret Flinter: Each week, Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Malaria killed an estimated 1.2 million people in Sub-Saharan Africa in 2010. And while those numbers are actually down from a decade before, the death rate is still just too high. A recent study conducted in Kenya by the Harvard School of Public Health has revealed a possible new weapon in tracking outbreaks and in helping to prevent further spread of the deadly disease. 90% of Kenya's population have cell phones. Malaria is caused by a parasite which is spread by mosquito bites but it turns out humans who carry the parasite but are asymptotic contribute to the further spread of the disease as well.

The Harvard researchers tracked Kenya's migratory population via 50 million cell phones compiling texting records for a full year. They then used the data to make a map for how malaria spreads in the country via a mobile population and the study just published in the Journal of Science shows an interesting migration pattern that countered their expectations. Researchers had assumed that the most heavily traveled roads to and from the capital Nairobi were the likely transmission routes but the cell phone data showed a different pathway to the outbreaks. Turns out the towns around **Lake Victoria** actually put travelers at the greatest risk. Researches used the collected migratory data from the cell phone records and applied it to a map of the country where outbreaks were known to have occurred. They say this is the first study that shows exact migration patterns connected directly to malaria outbreaks and can provide cell phone users with a simple text warning system while traveling that will alert them when they should take extra precautions. This cell phone mapping system can be easily deployed elsewhere, allowing public health officials to send text alert warnings of outbreak risks. Using cell phone data to track travelers heading into high risk areas for malaria outbreaks then using that platform to send a timely alert giving people a chance to take potentially life saving precautions and helping to prevent the spread of an infectious disease, now that's a bright idea.

(Music)

Margaret Flinter: This is Conversations on Health Care. I am Margaret Flinter.

Mark Masselli: And I am Mark Masselli, peace and health.

Conversations on Health Care, broadcast from the campus of WESU at Wesleyan University, streaming live at www.wesufm.org, and brought to you by the Community Health Center.